Lesson 11-3

Example 1

COOKING Write two conditional statements using the words in these sentences as phrases.

The temperature is 212°F.
The water in a pot boils..

Solution

Made one statement the hypothesis and the other the conclusion.

Statement 1 If the temperature is 212°F, then water in a pot will boil.

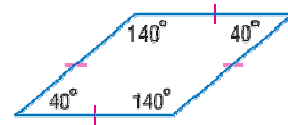*Statement 2* If the water in a pot boils, then the temperature is 212°F.

Example 2

Is the conditional statement true or false? If false, give a counterexample.

a. If a parallelogram is a rhombus, then it is a square.

b. If a parallelogram is a square, then it is a rhombus.

Solution

a. False. This figure is a counterexample because
    it shows a rhombus that is not a square.

b. True. Every square is a rhombus because it has
    all four sides of equal length.

Example 3

Is the argument valid or invalid? Use a picture to help you decide.

Conditional statement   If you live in Boston, you live in Massachusetts.

Given information   Vern lives in Massachusetts

Conclusion   Vern lives in Boston.

Solution

Draw a region for residents of Boston inside
the region for residents of Massachusetts.
The argument is not valid because Vern might
live somewhere in Massachusetts that is not
in Boston.